Remarks

Claims 1 and 3-11 are pending in the present application. Claim 2 is canceled. Claims 1 and 7-11 are amended, herein for clarification. No new matter has been entered.

Claims 1 and 3-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Schuegraf et al (US 5,624,865) in view of Lee et al (US 2002/0068466) and claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over Schuegraf in view of Lee as applied to claim 1 above, and further in view of Thakur (US 5,407,534). None of these cited references, singularly or in combination, teach or suggest all elements of independent claims 1 and 7-11.

Claims 1 and 7-11 all recite a process for forming a capacitor structure comprising, *inter alia*, forming an insulating layer over a semiconductor substrate, forming a container in the insulating layer, and forming a lower electrode layer along an inner surface of said container, wherein the lower electrode layer is formed so as to extend beyond the inner surface of the container.

Schuegraf is cited for teaching a process of forming a lower electrode layer along an inner surface of the container. The examiner concedes that Schuegraf and Lee, which is cited narrowly for the teaching of ALD, both fail to teach a lower electrode layer extending beyond the inner surface of the container. To cure this noted deficiency, the examiner consults the Thakur reference, which states, "it is essential that storage node capacitor cell plates be large enough to retain an adequate charge (or capacitance)". Referring to Figs. 2 and 3, the Thakur storage node capacitor cell plate comprises a container 23 (see Fig. 2), which is roughened via high temperature annealing. This annealing forms an HSG silicon layer (see Fig 3) on the surface of the container. (col. 3, lines 39-55). The structure 23 is then conductively doped to serve as a storage node cell plate. Expanding on this general teaching of the importance of plate size for capacitance, the examiner states that, according to Faraday's Law, capacitance is directly proportional to surface area. Based on these general principles, the examiner asserts that one skilled in the art would be led to increase the surface area of the lower electrode layer by having the lower electrode layer extend outside the container.

However, there is no teaching or suggestion that the desirability of increased surface area would lead one of ordinary skill in the art to extend an electrode layer, for example, an HSG

polysilicon layer, outside the container as claimed. The examiner concedes the references fail to teach this claim; therefore, the examiner bridges the teaching gap by utilizing an improper obvious to try rationale. An improper 'obvious to try' rationale is being applied when one skilled in the art would have "to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful". *See* MPEP 2145(X)(B). In the present case, there is no suggestion of what constitutes the best means of increasing surface area of the cell plate. For example, it seems logical that one skilled would increase the size of the container to increase the surface area. Or, one skilled in the art could add more peaks and/or curves in the cell plate surface, thereby increasing the surface area. These are merely speculative possibilities similar to the examiner's modification of the electrode layer to extend outside the container. Absent a teaching or suggestion from the references, one skilled in the art is forced to modify numerous parameters and/or components without any guidance of what modification will best achieve the improved surface area. In short, one skilled in the art could modify the cited references to achieve the claimed invention only through luck or hindsight, and neither of these constitutes a suggestion or motivation to modify the claimed invention.

Moreover, Thakur teaches away from extending the electrode layer outside the surface of the container. In Thakur, heating the silicon surface of the container produces the HSG electrode layer. (col. 3, lines 43-51). Because the electrode layer is part of the surface of the container, the HSG silicon inherently cannot extend beyond the container surface. Consequently, Thakur teaches away from extending the electrode layer outside the surface of the container, because the Thakur cell is incapable of being modified in that fashion. As a result, the examiner fails to establish a prima facie case of obviousness, thus the rejection under §103 should be removed.

The Applicants respectfully submit that, in view of the above amendments and remarks, the application is now in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully requested.

Respectfully submitted,

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